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IS 7028-7 (2002): Performance Tests for Complete, Filled Transport Packages, Part 7: Low Pressure Test [TED 24: Transport Packages]



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पूरे, भरित परिवहन पैकेज का कार्यकारिता परीक्षण
भाग 7 अल्प दाब परीक्षण
(दूसरा पुनरीक्षण)

Indian Standard
PERFORMANCE TESTS FOR
COMPLETE, FILLED TRANSPORT PACKAGES
PART 7 LOW PRESSURE TEST
(*Second Revision*)

ICS 55.180.40

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 2

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Transport Packages and Packaging Codes Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was first published in 1974. The second revision has been undertaken to bring it in line with ISO 2873 : 2000 'Packaging — Complete, filled transport packages and unit loads — Low pressure test' issued by the International Organization for Standardization.

In this revision the following technical changes have been incorporated:

- a) Concept of unit loads has been introduced;
- b) The clause on test report has been revised; and
- c) Table on atmospheric conditions has been added covering altitude from 4 000 m to 20 000 m alongwith a new column on temperature.

The composition of the Committee responsible for formulation of this standard is given in Annex B.

*Indian Standard***PERFORMANCE TESTS FOR
COMPLETE, FILLED TRANSPORT PACKAGES****PART 7 LOW PRESSURE TEST***(Second Revision)***1 SCOPE**

1.1 This standard specifies a method for subjecting complete, filled transport packages and unit loads to conditions of low air pressure similar to those encountered in aircraft.

1.2 This method is applicable to complete, filled transport packages and unit loads which are intended to be transported in pressurized aircraft flying at any altitude and in unpressurized aircraft flying at 3 500 m or less.

2 REFERENCES

2.1 The following Indian Standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
7030 : 1988	Identification of parts for complete filled transport packages when testing (<i>first revision</i>)
7031 : 2001	Method of conditioning for testing of complete, filled transport packages (<i>second revision</i>)

3 TERMINOLOGY

3.1 For the purpose of this standard, the following term and definition shall apply.

3.1.1 Test Item

A complete filled transport package or unit load.

4 PRINCIPLE

4.1 The test item is placed in a pressure chamber, and the pressure in the chamber reduced to that corresponding to an altitude of 3 500 m. This pressure is approximately equal to that in pressurized aircraft flying at any higher altitude. The pressure is then held for a predetermined period after which it is permitted to return to ambient pressure.

NOTE — While the pressure is held for the predetermined period, the temperature may also be maintained to that corresponding to the same altitude (*see Annex A*).

5 APPARATUS**5.1 Pressure Vessel**

Pressure vessel, of sufficient size to accommodate the test item, with pressure and temperature controls to meet the requirements of the procedure given in 7.

6 TEST ITEM PREPARATION

6.1 Fill the test item with its intended contents and ensure that the test item is closed normally, as if ready for distribution.

NOTE — Simulated or substitute contents may be used on condition that the dimensions and physical properties of such contents are as close as possible to those of the intended contents. However, the closure should be the same as for distribution.

7 CONDITIONING

The test item shall be conditioned in accordance with one of the conditions given in IS 7031.

8 PROCEDURE

8.1 Place the test item in the pressure vessel (*see 5*) and reduce the pressure at a rate not exceeding 150 mbar/min, until it reaches 650 mbar (± 5 percent). Maintain this pressure for the predetermined period.

NOTE — 1 mbar = 1 hPa = 0.1 kPa.

8.2 Restore the pressure by allowing dry air at laboratory temperature to enter at such a rate that the increase in pressure does not exceed 150 mbar/min.

NOTE — If it is desired to study the effects of temperature as well as pressure in pressurized aircraft, the atmosphere in the vessel should be maintained at $-8 \pm 1^\circ\text{C}$ during the predetermined period.

9 TEST REPORT

The test report shall include:

- a reference to this standard;
- the name and address of testing laboratory and name and address of the customer;

- c) the unique identification of the report;

d) the date of receipt of the test items and the date(s) of performance of the test;

e) the name, title and signature of persons accepting test responsibility for the test report;

f) a statement to the effect that the test results relate only to the items tested;

g) a statement that the report shall not be reproduced, except in full, without the written approval of the testing laboratory;

h) the number of replicate test items tested;

j) a full description, including dimensions, structural and material specifications of the test item and its fittings, cushioning, blocking, closure and reinforcing arrangements, gross mass of the test item and the mass of the contents in kg;
- k) the description of contents, if simulated for substituted contents were used, full details shall be given;

m) the relative humidity, temperature and time of conditioning; the temperature and relative humidity of the test area at the time of test, whether these values comply with the requirements of IS 7031;

n) the altitudes in which the test item was tested, using the method of identification given in IS 7030;

p) the temperature and pressure inside the pressure vessel, and the time for which they were maintained;

q) any deviation from the test method described in this standard; and

r) a record of the result, including any observations which assist in the correct interpretation of the results.

ANNEX A

(Clause 4.1)

ATMOSPHERIC CONDITIONS

A-1 The temperature in the holds of pressurized aircraft rarely falls below 0°C. However the temperature of packages and unit loads on loading into the aircraft will depend on the ambient temperature experienced prior to loading as well as the subsequent ambient temperature experienced in the hold prior to take off. These effects will persist for some time during flight.

A-2 The same ambient temperatures can also affect the temperatures of packages and unit loads in unpressurized aircraft. When these aircraft fly above 3 500 m the pressure will drop to the values given in Table 1, and the temperature of the packages and unit loads will be affected to some extent by outside air temperature at these altitudes depending on the length of the flight and the time/altitude profile of the flight.

Table 1 Conditions of the External Atmosphere
(Clause A - 2)

Altitude m	Pressure mbar or hPa	Temperature °C
(1)	(2)	(3)
4 000	615	– 11
6 000	470	– 24
8 000	355	– 37
10 000	265	– 50
12 000	190	– 56.5
15 000	120	– 56.5
18 000	75	– 56.5
20 000	55	– 56.5
NOTE — Values taken from the Air Transport Association (ATA).		

ANNEX B**(Foreword)****COMMITTEE COMPOSITION****Transport Packages and Packaging Codes Sectional Committee, TED 24**

<i>Organization</i>	<i>Representative(s)</i>
Indian Institute of Packaging, Mumbai	SHRI P. V. NARAYANAN (<i>Chairman</i>)
Advance Packaging Pvt Ltd, Mumbai	SHRI DAMODAR SOMANI
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Indian Institute of Packaging, Mumbai	DR N. G. MOKASHI

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